

PATENT COOPERATION TREATY

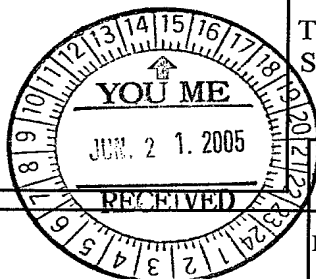
From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

To:
YOU ME PATENT & LAW FIRM
Seolim Bldg.
649-10 Yoksam-dong,
Kangnam-ku
135-080 Seoul
Republic of Korea



Date of mailing
(day/month/year) 15 June 2005 (15.06.2005)

Applicant's or agent's file reference
OPP050304KR

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.
PCT/ KR 2005/000329

International filing date (day/month/year)
3 February 2005 (03.02.2005)

Applicant
POSTECH FOUNDATION

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and is transmitted herewith.
Filing of amendments and statements under Article 19:
The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):
When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.
Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35
For more detailed instructions, see the notes on the accompanying sheet.
2. ☐ The applicant is hereby notified that no international search will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ **With regard to the protest** against payment of (an) initial fee(s) under Rule 40.2, the applicant is notified that:
 - ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices
 - ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.
4. **Reminder:**
Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.
The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.
Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.
In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months. See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide* Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/AT
Austrian Patent Office
Dresdner Straße 87
A-1200 Vienna/Austria
FAX No. +43 / 1 / 53424-200

Authorized officer

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference OPP050304KR	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/KR 2005/000329	(Earliest) Priority Date (<i>day/month/year</i>) 4 February 2004 (04.02.2004)	International filing date (<i>day/month/year</i>) 3 February 2005 (03.02.2005)
Applicant <div style="text-align: center; font-weight: bold; margin-top: 10px;">POSTECH FOUNDATION</div>		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 6 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☒ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see continuation of this first sheet.

2. ☒ **Certain claims were found unsearchable** (see continuation of this first sheet)

3. ☐ **Unity of invention is lacking** (see continuation of this first sheet)

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in the continuation of this first sheet. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the drawings to be published with the abstract is Figure No. 2

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

Continuation of first sheet**Continuation No. I:****Nucleotide and/or amino acid sequence(s)****(Continuation of item 1.b of the first sheet)**

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

- a. type of material: a sequence listing
- b. format of material: in written format
- c. time of filing/furnishing: contained in the international application as filed

Continuation No. II:**Observations where certain claims were found unsearchable****(Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

Claims Nos.: 13-17 because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 13 to 15 and 17 are directed to methods of treatment of the human or animal body, the subject matters of claims 13 to 15 and 17 were included in the search based on the alleged effects of the disclosed peptide compounds, but no establishment of novelty, inventive step and industrial application of the subject matters of claims 13 to 15 and 17 was carried out.

Claim 16 is directed to a method of preventing binding between A β 42 and human neutrophils through peptides according to the subject matters of claims 1-11. Since this formulation does not exclude a potential treatment of the animal or human body, the subject matter of claim 16 was searched as described above but had to be excluded from the establishment of novelty, inventive step and industrial application of the subject matters of claim 16.

Claims Nos.: 12, 16, 20 because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

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International application No.
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- 1) Claim 12 is directed to "A W-rich peptide mimic". Since no such substances are disclosed in the application, neither the search nor the establishment of novelty, inventive step and industrial application of the subject matters of claim 12 were carried out.
- 2) The parts of claims 16 and 20 which refer to "a W-rich peptide mimic" lack disclosure since no peptide mimic is described in the application. Therefore, these parts of claims 16 and 20 had to be excluded from the search as well as the establishment of novelty, inventive step and industrial application of the subject matters of claims 16 and 20.
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International application No.
PCT/KR 2005/000329

A. CLASSIFICATION OF SUBJECT MATTER

IPC⁷: C07K 7/06, C07K 5/11, C07K 5/117, C07K 5/097, A61K 38/06, A61K 38/07, A61K 38/08
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC⁷: C07K, G01N, A61KDocumentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Genbank, STN Reg., NCBI Blast (NR)Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPI, EPODOC, PubMed, Genbank, STN Reg., NCBI Blast (NR)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US2003/0096260A1 (ZHENHUA MIAO et al.) 22 May 2003 (22.05.2003)	1-11, 20
X	<i>*the whole document.*</i> <i>*claim 22.*</i>	18, 19
A	US 2003/0203841A1 (JI MING WANG et al.) 30 October 2003 (30.10.2003) <i>*the whole document.*</i>	1-11, 18-20

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
30 May 2005 (30.05.2005)Date of mailing of the international search report
15 June 2005 (15.06.2005)Name and mailing address of the ISA/ AT
Austrian Patent Office
Dresdner Straße 87, A-1200 Vienna

Facsimile No. +43 / 1 / 534 24 / 535

Authorized officer

GÖRNER W.

Telephone No. +43 / 1 / 534 24 / 558

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR 2005/000329

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>Bae YS, et al. "Differential activation of formyl peptide receptor-like 1 by peptide ligands." J Immunol. 2003, Vol. 171, No.12, pp. 6807-13. [retrieved from the Journal of Immunology online] [retrieved from the internet on 24 May 2005 (24.05.2005)] <http://www.jimmunol.org/cgi/reprint/171/12/6807></p> <p><i>*the whole document, page 6808, 2nd column, 2nd paragraph.*</i></p> <p style="text-align: center;">--</p>	1-11, 18-20
A	<p>Bae YS, et al. "Differential activation of formyl peptide receptor signaling by peptide ligands." Mol Pharmacol. 2003, Vol. 64, No. 4, pp. 841-7. [retrieved from Molecular Pharmacology online] [retrieved from the internet on 24 May 2005 (24.05.2005)] <http://molpharm.aspetjournals.org/cgi/reprint/64/4/841></p> <p><i>*the whole document.*</i></p> <p style="text-align: center;">--</p>	1-11, 18-20
P,X	<p>Bae YS, et al. "Identification of peptides that antagonize formyl peptide receptor-like 1-mediated signaling." J Immunol. 2004, 173, No. 1, pp. 607-14. (Abstract) NCBI PubMed [online] [retrieved from the internet on 24 May 2005 (24.05.2005)] <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15210823&query_hl=7></p> <p><i>*abstract.*</i></p> <p style="text-align: center;">----</p>	1-11, 18-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR 2005/000329

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
A				none	
US	A	20030096 260		none	

PATENT COOPERATION TREATY

To:

YOU ME PATENT & LAW FIRM
Seolim Bldg.
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PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year)	15 June 2005 (15.06.2005)
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Applicant's or agent's file reference OPP050304KR

FOR FURTHER ACTION See paragraph 2 below
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International application No. PCT/KR 2005/000329
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International filing date (day/month/year) 3 February 2005 (03.02.2005)

Priority Date (day/month/year) 4 February 2004 (04.02.2004)

International Patent Classification (IPC) or both national classification and IPC C07K 7/06, C07K 5/11, C07K 5/117, C07K 5/097, A61K 38/06, A61K 38/07, A61K 38/08
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Applicant

POSTECH FOUNDATION

1. This opinion contains indications relating to the following items:

- ☒ Cont. No. I Basis of the opinion
- ☐ Cont. No. II Priority
- ☒ Cont. No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Cont. No. IV Lack of unity of invention
- ☒ Cont. No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Cont. No. VI Certain documents cited
- ☐ Cont. No. VII Certain defects in the international application
- ☒ Cont. No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ AT Austrian Patent Office Dresdner Straße 87, A-1200 Vienna

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Authorized officer GÖRNER W.
--

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Continuation No. I

Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed.
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion was carried out on the basis of:
 - a. type of material: a sequence listing
 - b. format of material: a sequence listing
 - c. time of filing/furnishing: contained in the international application as filed

Continuation No. III:

**Non-establishment of opinion with regard to
novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of the said claims Nos. 12-17 because said claims Nos. 13-17 relate to the following subject matter which does not require an international preliminary examination (specify):

Although claims 13 to 15 and 17 are directed to methods of treatment of the human or animal body, the subject matters of claims 13 to 15 and 17 were included in the search based on the alleged effects of the disclosed peptide compounds, but no establishment of novelty, inventive step and industrial application of the subject matters of claims 13 to 15 and 17 was carried out.

Claim 16 is directed to a method of "preventing binding of A β 42 to human neutrophils through peptides according to the subject matters of claims 1-11. Since this formulation does not exclude a potential treatment of the animal or human body, the the subject matter of claim 16 was searched, but no establishment of novelty, inventive step and industrial application was carried out.;

the description, claims or drawings (particular elements indicated below) or said claims Nos. 12 are so unclear that no meaningful opinion could be formed (specify):

Claim 12 is directed to "A W-rich peptide mimic". Since no such substances are disclosed in the application, neither the search nor the establishment of novelty, inventive step and industrial application of the subject matters of claim 12 was carried out.

Continuation No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-11, 20	YES
	Claims 18, 19	NO
Inventive step (IS)	Claims 1-11, 20	YES
	Claims 18, 19	NO
Industrial applicability (IA)	Claims 1-11, 18-20	YES
	Claims ----	NO

2. Citations and explanations:

The following documents were found in search of the state of the art for the subject matters of claims 1-11 and 13-20.

D1: US2003/0096260A1 (Zhenhua Miao et al.) 22.05.2003

D2: US 2003/0203841A1 (Ji Ming Wang et al.) 30.10.2003

D3: Bae YS, et al. J Immunol. 2003, Vol. 171, No.12, pp. 6807-13. [retrieved from the Journal of Immunology online] [retrieved from the internet on 24.05.2005]

D4: Bae YS, et al. Mol Pharmacol. 2003, Vol. 64, No. 4, pp. 841-7. [retrieved from Molecular Pharmacology online] [retrieved from the internet on 24.05.2005]

D5: Bae YS, et al. J Immunol. 2004, 173, No. 1, pp. 607-14. (Abstract) NCBI PubMed [online] [retrieved from the internet on 24.05.2005]

Document D1 describes ligands for the FPRL1 receptor, namely a CK β 8-1 truncation variant and its alternatively spliced form named SHAAAGtide which are fully functional on monocytes and neutrophils. Document D1 describes a method for identifying a FPRL1 receptor antagonist comprising contacting a cell expressing a FPRL1 receptor with a ligand peptide and contacting the receptor with a candidate antagonist and detecting if its binding to the receptor.

Document D2 describes peptide interactors with members of the formyl receptor family which modulate cell migration and activation.

Document D3 describes the activation of Formyl Peptide Receptor-Like 1 by peptide Ligands. Document D3 also mentions a ligand binding assay comprising the incubation of FPRL1 expressing cells with different concentrations of a peptide ligand in a competition assay between labelled and unlabelled ligand.

Document D4 describes modified forms of the WKYMVm peptide and their effect of the incubation with FPRL expressing cells. Document D4 also mentions a ligand binding assay comprising the incubation of FPRL1 expressing cells with different concentrations of a peptide ligand in a competition assay between labelled and unlabelled ligand.

The abstract of document D5 describes some of the peptides disclosed in the application.

The establishment of Novelty, Inventive step and industrial application for the subject matters of claims 1-11 and 18-20 was based on the documents D1 to D4

Novelty

None of the cited documents D1-D4 describes peptide sequences according to SEQ IDs NOs: 4, 5, 6, 8, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36 and 7. These Sequences according to the subject matters of claims 1-11 are therefore novel. A pharmaceutical composition according to claim 20 is also novel.

However, claims 18 and 19 are directed to "A method of identifying a FPR class receptor antagonist" providing a cell expressing FPR (FPRL1) receptor, contacting the cell with candidate antagonist and identifying the candidate if it binds to FPR (FPRL1) receptor and inhibits its activity. Document D1 mentions a method of identifying a FPRL1 receptor antagonist comprising contact of a cell expressing a FPRL1 receptor with a protein or polypeptide to stimulate the receptor, contacting the receptor with a candidate antagonist compound and detecting the receptor with a candidate antagonist compound. Since all essential technical features of the subject matters of claims 18 and 19 can be found in document D1, the subject matters of claims 18 and 19 are not novel.

Inventive Step

None of the cited documents D1-D4 describes or suggests the preparation or use of peptides according to the subject matters of claims 1-11, i.e. sequences with SEQ IDs NOs: 4, 5, 6, 8, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36 and 7. These Sequences and their use as antagonists of FRPL1 receptor are therefore inventive. The subject matters of claim 20, a pharmaceutical composition according to the subject matters of claims 1 -11 are also inventive.

Due to their lack of novelty, the subject matters of claims 18 and 19 are not inventive.

Industrial applicability

Industrial applicability of the subject matters of claims 1-11 and 18-20 is given.

Continuation No. VIII:

Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1) The expression "W-rich" in claim 1 lacks definition, because it does not refer to any properly defined sequence. Furthermore, peptides with sequence lengths claimed in claims 2-5 lack definition since the disclosure of the application is restricted to peptides of a length between 3 and 6 amino acids. For these reasons, the subject matter of claim 1-5 was limited for the search and the establishment of novelty, inventive step and industrial applicability to peptides of 3 to 6 amino acids length with amino acid sequences according to the sequences

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sequences according to the sequences disclosed as SEQ ID NO: 4, 5, 6, 8, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36 and 7. The double-reference to SEQ ID NO: 35 in claim 6 had been interpreted as a typing error and SEQ ID NO 36 was also included in the search.

2) The parts of claims 16 and 20 which refer to "a W-rich peptide mimic" lack disclosure since no "peptide mimic" is described in the application. Therefore, these parts of claims 16 and 20 had to be excluded from the search as well as the establishment of novelty, inventive step and industrial application of the subject matters of claims 16 and 20.

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

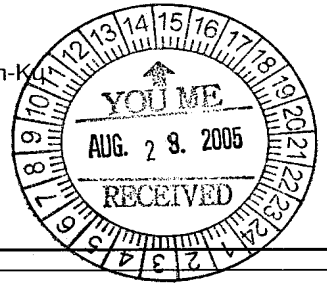
LO

PCT

NOTIFICATION CONCERNING
TRANSMITTAL OF COPY OF INTERNATIONAL
APPLICATION AS PUBLISHED OR REPUBLISHED

To:

YOU ME PATENT & LAW FIRM
Seolim Bldg.
649-10, Yoksam-dong, Kangnam-Ku
Seoul 135-080
RÉPUBLIQUE DE CORÉE



Date of mailing (day/month/year)
18 August 2005 (18.08.2005)

Applicant's or agent's file reference
OPP050304KR

IMPORTANT NOTICE

International application No.
PCT/KR2005/000329

International filing date (day/month/year)
03 February 2005 (03.02.2005)

Priority date (day/month/year)
04 February 2004 (04.02.2004)

Applicant
POSTECH Foundation et al

The International Bureau transmits herewith the following documents:

- ☒ copy of the international application as published by the International Bureau on 18 August 2005 (18.08.2005) under No. WO 2005/075505
- ☐ copy of international application as republished by the International Bureau on under No. WO
- For an explanation as to the reason for this republication of the international application, reference is made to INID codes (15), (48) or (88) (as the case may be) on the front page of the attached document.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Philippe Becamel

Facsimile No.+41 22 740 14 35

Facsimile No.+41 22 338 70 90